

What is claimed is:

- 1 1. A retention mechanism for mounting an integrated circuit package to a  
2 circuit board, comprising:  
3 a dish-shaped, elastically deformable pressure plate, having a first apex and a  
4 first periphery spaced away from the first apex, the pressure plate  
5 being deformable by applying a first force to the first periphery  
6 directed generally towards the first apex;  
7 a dish-shaped, elastically deformable backing plate, having a second apex  
8 and a second periphery spaced away from the second apex, the  
9 backing plate being deformable by applying a second force to the  
10 second periphery directed generally towards the second apex; and  
11 means for simultaneously applying the first and second deforming forces to  
12 the first and second peripheries to engage the first apex with a surface  
13 of the integrated circuit package and the second apex with a surface  
14 of the circuit board so as to effect continuous electrical continuity  
15 between the integrated circuit package and the circuit board.
- 1 2. The retention mechanism of claim 1 wherein an average contact resistance  
2 between the integrated circuit package and the circuit board is less than  
3 about 50 milliohms.
- 1 3. The retention mechanism of claim 2 wherein the average contact resistance  
2 is about 13 milliohms.
- 1 4. The retention mechanism of claim 1 further comprising an elastically  
2 deformable gasket positioned between the pressure plate and the integrated  
3 circuit package.

1     6.     The retention mechanism of claim 4 wherein the gasket has a height less  
2     than about 2 millimeters.

1     7.     The retention mechanism of claim 6 wherein the gasket has a height less  
2     than about 1 millimeter.

1     8.     The retention mechanism of claim 1 wherein the plates are made from a  
2     material selected from the group consisting of beryllium copper and steel.

1     9.     The retention mechanism of claim 1 wherein one or more of the first and  
2     second peripheries is fractal-shaped.

1     10.     The retention mechanism of claim 1 wherein the backing plate is in contact  
2     with a circuit board having a back side and the fractal-shaped periphery to  
3     enable a plurality of components to be attached to the back side of the circuit  
4     board, after the integrated circuit package has been mounted to the circuit  
5     board.

1 11. A retention mechanism comprising:  
2 a paraboloid, elastically deformable pressure plate, having a concave surface,  
3 a convex surface, a summit, and a periphery spaced away from the  
4 summit, the pressure plate being deformable by applying a first force  
5 to the periphery directed generally towards the summit;  
6 an integrated circuit package having a top and a bottom surface, the convex  
7 surface of the pressure plate being contactable by the top surface;  
8 a circuit board having a top and a bottom surface, the bottom surface of the



- 1    16.    The retention mechanism of claim 11 wherein the summit of the pressure  
2           plate is located on the convex surface of the pressure plate and the periphery  
3           of the pressure plate is located on the concave surface of the pressure plate,  
4           and the height from the summit of the pressure plate to the periphery of the  
5           pressure plate is less than about 2 millimeters.
  - 1    17.    The retention mechanism of claim 16 wherein the height from the summit to  
2           the periphery is less than about 1.5 millimeters.
  - 1    18.    The retention mechanism of claim 11 wherein the summit of the backing  
2           plate is located on the concave surface of the backing plate and the periphery  
3           of the backing plate is located on the convex surface of the backing plate,  
4           and the height from the periphery to the summit is less than about 2  
5           millimeters.
  - 1    19.    The retention mechanism of claim 18 wherein the height from the periphery  
2           to the summit is less than about 1.5 millimeters.
  - 1    20.    The retention mechanism of claim 11 wherein the integrated circuit package  
2           includes an organic land grid array.
  - 1    21.    The retention mechanism of claim 11 wherein the integrated circuit package  
2           includes a flip chip pin grid array.
  - 1    22.    The retention mechanism of claim 11 further comprising a heat sink in  
2           contact with the concave surface of the pressure plate.
  - 1    23.    An electronic assembly comprising:  
2           a paraboloid, elastically deformable pressure plate, having a concave surface,  
3           a convex surface, a summit, and a periphery spaced away from the



- 1    26.    A method of testing a retention mechanism comprising:  
2            creating a daisy chain from a circuit board through a connector into a  
3            integrated circuit package to a die and back to the circuit board; and  
4            measuring resistance between the die and the circuit board.
  
- 1    27.    The method of testing of claim 26 further comprising:  
2            determining the contribution of the connector to the total resistance; and  
3            determining the extent of contact between the connector and the integrated  
4            circuit package.
  
- 1    28.    The method of testing of claim 26 further comprising:  
2            measuring the resistance between the integrated circuit package and the  
3            circuit board.
  
- 1    29.    A method of assembling an electronics assembly comprising:  
2            placing an integrated circuit package on a circuit board;  
3            placing a slightly curved pressure plate on a top surface of the integrated  
4            circuit package;  
5            placing a slightly curved backing plate on a bottom surface of the circuit  
6            board; and  
7            applying force to outer edges of the plates to retain the integrated circuit  
8            package on the circuit board and to create an evenly distributed  
9            pressure across conductors of the integrated circuit package.
  
- 1    30.    The method of claim 29 further comprising:  
2            placing a heat sink on the slightly curved pressure plate; and  
3            attaching the heat sink to the circuit board.
  
- 1    31.    The method of claim 29 further comprising placing a gasket between the  
2            integrated circuit package and the slightly curved pressure plate.